

**WHAT IS CLAIMED IS:**

1. A sensor for measuring a flow speed of a fluid medium, comprising:

a housing;

a carrier membrane disposed in the housing and being essentially in a form of a vane having a circumference and at least one edge region;

holding elements arranged over a portion of the circumference connecting the vane to the housing so that only the at least one edge region of the carrier membrane is subjected to mechanical stress caused by the housing; and

an electrically conductive track with feed lines installed on the carrier membrane in a region of a neutral fiber for the carrier membrane which does not experience a mechanical strain when the carrier membrane is bent, the electrically conductive track being adapted for being heated relative to the environment by an electrical current flowing through the electrically conductive track.

2. The sensor according to claim 1, wherein the carrier membrane comprises two layer and the conductive track is disposed between the two layers, the two layers being composed of the same material and having the same thickness so that the neutral fiber which is not subject to stress if the carrier membrane is bent is positioned between the two layers.

3. The sensor according to claim 1, wherein the carrier membrane comprises a polymer.

4. The sensor according to claim 3, wherein the electrically conductive track comprises a metal.

5. The sensor according to claim 1, wherein the housing includes a fluid inlet and a fluid outlet arranged so that the fluid medium flows essentially parallel to a plane of the carrier membrane.

6. The sensor according to claim 1, wherein the carrier membrane is secured to the housing at four points and has a slight sag.